CLAIMS

What is claimed is:

1. A method of fabricating an integrated optoelectronic circuit, the method comprising:

positioning a microchip, including a modulator, on a first flexible dielectric substrate;

positioning a polymer electro-optic waveguide on or within the first flexible dielectric substrate;

positioning a ground electrode along the electro-optic waveguide;

positioning a signal electrode along the electro-optic waveguide opposite the ground electrode;

applying a first patterned metallization layer to the first flexible dielectric substrate thereby coupling the ground electrode and the modulator;

positioning a second flexible dielectric substrate along the first flexible dielectric substrate;

providing a plurality of via openings in the first and second flexible dielectric substrates; and

applying a second patterned metallization layer to the second flexible dielectric substrate thereby coupling the signal electrode and the modulator.

2. The method as set forth in Claim 1 further comprising providing a heat exchanger in thermal contact with the microchip for cooling the modulator.

3. The method as set forth in Claim 1 further comprising encapsulating the microchip in a microwave absorber.

4. The method as set forth in Claim 1 further comprising poling the polymer electro-optic waveguide.

5. The method as set forth in Claim 1 wherein the first and second patterned metallization layers and the signal electrode comprise microstrip transmission lines.

6. The method as set forth in Claim 1 wherein the first and second dielectric substrates comprise a polyamide polymer.

7. The method as set forth in Claim 1 wherein the electro-optic waveguide comprises a Mach-Zehnder interferometer.

8. The method as set forth in Claim 1 wherein the modulator comprises a monolithic microwave integrated circuit.

9. The method as set forth in Claim 1 wherein the electro-optic waveguide is positioned on the first surface of the first flexible dielectric substrate and the microchip is position of the second surface of the first flexible dielectric substrate.

10. The method as set forth in Claim 1 wherein the electro-optic waveguide is positioned between the first and second flexible dielectric substrates.

11. The method as set forth in Claim 1 wherein the polymer electro-optic waveguide comprises a poly(acrylate), a poly(alkyl methacrylate), a poly(tetrafluoroethylene), a silicone or mixtures thereof, wherein the alkyl groups have one to about twelve carbon atoms.

12. The method as set forth in Claim 11 wherein the poly(alkyl methacrylate) comprises poly(methyl methacrylate).

13. A method of fabricating an integrated optoelectronic circuit, the method comprising:

positioning a microchip on a first flexible dielectric substrate;

positioning a polymer electro-optic waveguide on or within the first flexible dielectric substrate;

positioning a ground electrode along the electro-optic waveguide;

positioning a signal electrode along the electro-optic waveguide opposite the ground electrode;

applying a first patterned metallization layer to the first flexible dielectric substrate;

positioning a second flexible dielectric substrate along the first flexible dielectric substrate;

providing a plurality of via openings in the first and second flexible dielectric substrates; and

applying a second patterned metallization layer to the second flexible dielectric substrate.